

Appl. No 10/813,520
Amdt. dated May 17, 2006
Reply to office action of February 17, 2006

REMARKS/ARGUMENTS

Claims 1-21 are pending in the present application and claims 3-5, 11, 12, 14, 18, 20 and 21 are withdrawn from consideration from an election of Species I. Claims 1, 2, 6-10, 13, 15-17 and 19 presently stand rejected. Claims 7, 9-10 and 19 are cancelled. Independent claims 1, 8, 16 and dependent claim 2 are presently amended. This paper introduces no new matter.

Applicants respectfully request reconsideration and allowance of the present claims in view of the foregoing amendments and following remarks.

Claim rejections under 35 U.S.C. § 102 (b).

Each of independent claims 1, 8 and 16 stand rejected under 35 U.S.C. §102(b) to Smuland (US 3,628,880), Sterman (US 3,965,066), Shepard (US 5,252,026), Becck, et al (US 2002/0098078), De Cardenas (US 6,945,749) 35 U.S.C. §102(e), Sifford (US 3,742,705), Walters, et al (US 6,077,035) and Sheldon (US 3,670,497). The Examiner's comments on page 8 of the action were also noted. The Examiner's rejections under 35 U.S.C. §102(b) are hereinafter traversed and reconsideration is respectfully requested for the following reasons.

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The Applicants' have amended their present invention to distinguish of the prior art references of record. In each of the amended independent claims, the location and function of the fluid flow directional modifier are further defined.

In each independent claim, the one or more fluid flow directional modifier extends directly from a wall forming a trailing edge of a vane and is in the form of a turning foil with an arcuate surface that encourages parasitic leakage air flowing radially outwardly to be turned so as to be flowing substantially parallel to the gas flow path at the vane trailing edge. Support for the Applicants' present invention may be found in their original application in paragraphs [0030-0031] and in Figures 4 and 5.

The following references disclose holes as the directional modifier: Smuland (US 3,628,880), Sterman (US 3,965,066), Beeck, et al (US 2002/0098078), De Cardenas (US 6,945,749) and Sifford (US 3,742,705). The Applicants' present invention claims turning foils as the directional modifier, and Applicant's submit their invention presently distinguishes over holes.

Shepherd (US 5,252,026) discloses, "...axially elongate, rectangular strips extending axially forwardly....the strip turbulators are preferably axially aligned with the centerline axis...". See (Column 4, lines 34-50). The Applicants' present invention claims turning foils as the directional modifier, and presently distinguishes over the rectangular strips of Shepherd.

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Walters, et al (US 6,077,035) discloses, "...the stator platform (22) then redirects air rearwardly over the blade platforms (15)". See (Column 6, Lines 17-19). The Applicants' present invention claims turning foils as the directional modifier, and presently distinguishes over the stator platform of Walters, et al.

Sheldon (US 3,670,497) discloses, "[a] low loss annular lip, or guiding vane extends forwardly from the inner end of flange 68 to prevent efficiency losses in flow at that location". See (Column 3, Lines 50-54) and Figure 2. The Applicants' present invention claims turning foils extending directly from a wall forming the trailing edge of a vane as the directional modifier, and presently distinguishes over annular guiding vane of Sheldon. Sheldon does not disclose a foil shaped modifier, nor does Sheldon modify the direction of air flowing radially outwardly. Figure 2 of Sheldon shows a full annular section at (68) and not individual foils.

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Claim rejections under 35 U.S.C. § 103.

The Examiner indicates Claims 1, 2, 6-10, 13, 15-17, 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over any of Sifford, Beeck et al, Wathers et al and Smuland in view of Sheldon (US 3,670,497). The Applicants' respectfully disagree that the combination of references discloses each of the claimed limitations of the Applicants' present invention. The Applicants' present invention uses one or more *turning foils* with an arcuate surface that encourages parasitic leakage air flowing radially outwardly to be turned so as to be flowing substantially parallel to the gas flow path at the trailing edge of the vane. Sheldon uses “[a] low loss *annular lip, or guiding vane* extends forwardly from the inner end of flange 68 to prevent efficiency losses in flow at that location”. See (Column 3, Lines 50-54) and figure 2. Sheldon does not disclose, teach or suggest a foil shaped modifier, nor does Sheldon modify the direction of air flowing radially outwardly. Figure 2 of Sheldon shows slots (62) and a full annular lip or vane section at (68) and not individual foils.

The Examiner also indicates Claims 1, 2, 6-10, 13, 15-17, 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over any of Sifford, Beeck et al, Wathers et al and Smuland in view of Sollinger (2,603,453). The Applicants' respectfully disagree that the combination of references discloses each of the claimed limitations of the Applicants' present invention. The Applicants' present invention uses one or more turning foils with

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an arcuate surface that encourages parasitic leakage air flowing *radially outwardly to be turned so as to be flowing substantially parallel* to the gas flow path at the trailing edge of the vane. Sollinger does not disclose, teach or suggest using foils to encourage radially flowing air into a direction that is substantially parallel to the gas flow path at the trailing edge of the vane.

The Examiner also indicates Claims 1, 2, 6-10, 13, 15-17, 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over any of Sifford, Beeck et al, Wathers et al and Smuland in view of Shepherd (5, 252, 026). The Applicants' respectfully disagree that the combination of references discloses each of the claimed limitations of the Applicants' present invention. The Applicants' present invention uses one or more *turning foils* with an arcuate surface that encourages parasitic leakage air flowing radially outwardly to be turned so as to be flowing substantially parallel to the gas flow path at the trailing edge of the vane. Shepherd does not disclose, teach or suggest using *foils* to modify flow direction. Shepherd discloses, "...axially elongate, *rectangular strips* extending axially forwardly...the strip *turbulators* are preferably axially aligned with the centerline axis...". See (Column 4, lines 34-50).

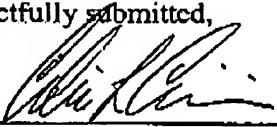
The Examiner also indicates Claims 1, 2, 6-10, 13, 15-17, 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over any of Sifford, Beeck et al, Wathers et al and Smuland in view of Bobo et al (3,565,545) and Shepherd (5,252,026). The Applicants' respectfully disagree that the combination of references discloses each of the

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claimed limitations of the Applicants' present invention. The Applicants' present invention uses one or more turning *foils* with an arcuate surface that encourages parasitic leakage air flowing *radially outwardly to be turned* so as to be flowing substantially parallel to the gas flow path at the trailing edge of the vane. Neither Bobo nor Shepherd disclose, teach or suggest using foils to encourage radially flowing air into a direction that is substantially parallel to the gas flow path at the trailing edge of the vane.

In view of the foregoing, Applicant respectfully request withdrawal of the rejections against claims 1, 2, 6-10, 13, 15-17 and 19 and allowance thereof. The Examiner is invited to telephone the Applicants' representative if it appears a telephone discussion would help resolve any outstanding matters or place the application in even better condition for allowance. Please charge any required fees to the Deposit Account of record.

Respectfully submitted,

By 

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